What is Claimed:

1. An uninterrupted power supply (UPS), having first and second input terminals for connection to a power line source, one of said terminals being connected to power line neutral, first and second output terminals, one of said output terminals being connected to said neutral through an uninterrupted conductor, and a battery, comprising

a power factor correction (PFC) circuit having an AC to DC converter circuit, an input connected across said input terminals, and having a positive output terminal providing a positive DC high voltage with respect to said neutral and a negative output terminal providing a negative high DC voltage with respect to neutral,

a high positive voltage rail connected to said positive output terminal and a negative high voltage rail connected to said negative output terminal,

an output circuit having an input connected across said positive and negative rails, and providing an output to said output terminals, and

a battery connection circuit connecting said battery to said PFC converter circuit whereby when the power line voltage fails and said UPS is in battery mode operation, battery voltage is converted through said PFC converter circuit to supply said positive and negative high voltage rails.

2. The UPS of claim 1, wherein said PFC converter circuit comprises a first inductance and a first capacitor connected between said positive high voltage rail and neutral, and a second inductor and a second capacitor which is connected between said negative high voltage rail and neutral, and wherein said battery connection circuit operatively connects said battery to drive each of said first and second inductors during power line failure.

3. The UPS as described in claim 1, wherein said PFC converter circuit comprises first and second switching elements, and further comprises switching means for switching said switching elements under normal operation and battery mode operation.

4. The UPS as described in claim 1, wherein said battery has first and second output terminals and said battery connection circuit connects one of said terminals directly to said neutral.

5. The UPS as described in claim 1, wherein said battery has first and second output terminals and wherein said battery connection circuit comprises a respective diode connected between neutral and at least one of said battery terminals.

6. The UPS as described in claim 5, wherein said battery connection circuit balances said battery around neutral.

7. The UPS as described in claim 4, further comprising a switch connected to the other one of said battery terminals, said switch being normally open, and switching control means for closing said switch when the voltage on said power line source falls to a predetermined unacceptable level.

8. The UPS as described in claim 1, wherein said output circuit is a DC to AC converter.

9. An uninterrupted power supply (UPS), having first and second input terminals for connection to a power line source, the first of said input terminals being connected to power line neutral, first and second output terminals, an uninterrupted neutral connection from said

first input terminal to said first output terminal, for connecting neutral directly to said first output terminal, comprising:

a rectifier means connected to said input terminals for providing positive and negative rectified voltage outputs,

a power factor correction (PFC) circuit connected to the outputs of said rectifier means, said PFC circuit having an AC to DC converter means for providing positive and negative DC voltage outputs relative to said neutral connection, a battery having first and second output terminals, one of said terminals being connected directly to said neutral connection, and a connection circuit for connecting the other of said battery terminals to said PFC converter circuit, and

an output circuit having an input connected across said positive and negative DC outputs and providing an output across said output terminals.

10. The UPS as described in claim 9, wherein said output circuit is a DC to AC converter.

11. The UPS as described in claim 9, wherein said battery connection circuit comprises a switch for controllably connecting said battery to said PFC converter circuit.

12. The UPS as described in claim 9, comprising control means for controlling said PFC converter circuit when the power line source is below a predetermined voltage level.

13. An uninterrupted power supply (UPS) having first and second input terminals for receiving AC power from a power source, one of said input terminals being connected to the neutral of said power source, said UPS providing AC output power to a pair of output terminals, said UPS being

operable in an AC mode when said power source delivers a predetermined satisfactorily high voltage and operable in a battery mode when said power source does not deliver said satisfactorily high voltage, comprising:

only one converter circuit for providing a DC output;

a power factor correction circuit for delivering a power factor corrected power from said input terminals;

a battery for providing energy to said one converter circuit when in said battery mode;

a DC to AC converter for converting the output of said one converter circuit to provide AC power to said output terminals; and

an uninterrupted connection for connecting (a) said one input terminal connected to neutral, (b) one of said battery terminals and (c) one of said AC output terminals, whereby power neutral is connected directly to said battery and to a load connected across said AC output terminals.